Volume 1 September 1937 Number 2

The EXTENSION ENTOMOLOGIST

Just recently an entomologist who is associated with the research phases of insect control asked "Why can't we get more people to adopt our recommendations?" This query should be considered a healthy sign for the extension entomologists and encourage them to work all the harder to solve this problem.

During the discussion a remark was made which was stating it a little too strong but which, nevertheless, was apropos. It was stated that "If a farmer were asked to use gold as fertilizer he would do it, but when asked to apply an insecticide he would state at once, 'It costs too much.' "

In view of this prevailing attitude every effort should be put forth to show the public that insect control is a necessary form of conservation and should be considered just as seriously as fertilizers, certified seed, or cultivation. Why till the soil, seed and fertilize to produce a crop in order that insects may reap the harvest?

M. P. Jones

M. P. Jones,
Extension Entomologist

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE AND
EXTENSION SERVICE, COOPERATING

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THE EXTENSION ENTOMOLOGIST

INTRODUCTION

The first issue of The Extension Entomologist was slow in coming out. Errors were noted. We hope that errors will not occur in future issues. One was the omission of an identifying date or number on the issue; another, the name of Dr. Claude Wakeland of Idaho was incorrectly spelled Wakefield. It is understood also that some copies were not received.

To extension entomologists: Don't look in the exchange material for The Extension Entomologist. This publication is mailed separately.

PERSONNEL

Delaware.--Dr. P. L. Rice, who has held a position here as Assistant Research and Extension Entomologist, resigned as of September 1, to accept the position of head of the department of Biology at Alma College, Alma, Mich.

Montana.--Dr. A. L. Strand, State entomologist and head of the department of Entomology, has been elected president of Montana State College, effective August 1. Dr. H. B. Mills, assistant State entomologist, succeeds Dr. Strand.

South Dakota.--Mr. G. I. Gilbertson has been appointed extension entomologist in South Dakota.

SOURCES OF MATERIAL

George Jones, of Missouri, has prepared a story on the issuance of his bimonthly news letter, together with a sample letter. County agents appreciate receiving these letters because they do not have time to review the literature and prepare enough articles to handle the local situation adequately.

Interesting material still is coming in annual reports and is included; also, timely topics picked up here and there, and references to obscure entomological articles.

When you locate anything, pass it along.

ANNOUNCEMENTS

Eastern branch meeting, American Association of Economic Entomologists. The Walton Hotel, Philadelphia, Pa., November 18-19, 1937.

Cumberland-Shenandoah Fruit Conference. Winchester, Va., November 27, 1937.

Annual meeting, American Association of Economic Entomologists. Indianapolis, Ind., December 27-31, 1937.

Cotton States branch meeting, American Association of Economic Entomologists. New Orleans, La., February 3-5, 1938.

Meeting of the Texas Entomological Society. Houston, Tex., February 24-26, 1938.

North Central States branch meeting, American Association of Economic Entomologists. Columbus, Ohio, March 3-4, 1938.

BIMONTHLY INSECT-CONTROL SUGGESTIONS FOR MISSOURI COUNTY AGENTS

By George D. Jones
Extension Entomologist
University of Missouri

The use of the insect-control suggestions for county agents which are sent to them every 2 months throughout the year has served two or three main purposes. Soon after I began work in extension entomology, I found that the agents needed assistance in preparing subject-matter material on insect control. Time is a big factor in any county agent's office. With the subject-matter material the agents wanted suggestions on how to begin control work, and I found that oftentimes this material stimulated action, where otherwise nothing would have been done in the county.

The preparation of these suggestions has helped the agents to carry out the work in entomology that they have in their program. It helps them to make out their monthly calendars of work and follow them more closely. Along this line I might say that I have found it a little difficult to forecast what insects would attack during the year and what plan of attack would be used. Many times the area of infestation and other factors enter into a program of work and cause it to be a little difficult to follow. The use of this material has enabled me better to direct activities of the control of insects that were expected to appear. In other words, it enables one to keep up to the minute with insect developments and to help the agents forestall and prevent losses due to insects, by having knowledge in advance of their appearance. This has proved to be the case practically every year, and this year especially, with aphis and army worms. It permits one to focus attention on certain insects, and helps agents to know what is going on in other counties.

This material naturally will not go all the way and be sufficient in itself in carrying on extension work in a State. It helps me to reach the whole State quickly and enables me to present information at the proper time, which information the agents seem to appreciate. In all, some forty-five different insects were covered last year in these suggestions. I feel certain that if this method had not been used, many agents would not have been aware of many of the pests in their counties, and would not have used any publicity or attempted any control measures against several of these insect pests.

In planning work for the year, I make out county-agent plans of work and deal with several of the insects that I believe will be causing trouble in the State. I select from this list those insects that will be bothering during the first 2-months' period, then for the next 2 months, and so on throughout the entire year. The insects selected are as a whole more or less common ones that will be encountered throughout the season. There are some that develop more or less unexpectedly, and these are included in the suggestions. In handling State-wide epidemics, as with grasshoppers and chinch bugs, additional and separate letters pertaining to specific instructions, organization work, and other items have to be sent to the agents.

These bimonthly suggestions are sent to all county agents and assistant county agents. The home demonstration agents' attention is called to the material when something special is prepared that they are interested in.

The letter and suggestions follow.

COOPERATIVE EXTENSION WORK
AGRICULTURE AND HOME ECONOMICS
STATE OF MISSOURI

University of Missouri
College of Agriculture
U. S. Department of Agriculture
Cooperating

Agricultural Extension Service
Waters Hall
Columbia, Missouri

September 3, 1937

Dear Agent:

RE: INFORMATION AND SUGGESTIONS ON CONTROL OF CERTAIN INSECTS WHICH WILL BE PRESENT DURING SEPTEMBER AND OCTOBER IN THE STATE

They are discussed as follows:

Grasshoppers - Very timely, and of interest to every agent, local committees, and farmers.

Hessian Fly - Very timely, and of importance to every wheat grower.

Stored Grain Pests - Of State-wide interest.

Livestock and Poultry Insects - Very timely, and of State-wide interest.

Garden Clean-Up - State-wide application.

Peach Tree Borer - Very timely in peach-growing areas.

Borers and Insects Affecting Shade Trees - State-wide interest and general information.

Care of Bees - Of special interest in fruit counties and honey-producing areas.

Control of Fleas - State-wide interest.

An attempt has been made to keep this information as brief as possible. It is hoped that these statements will help you answer some of the questions that you may be called upon to answer.

Very truly yours,

Signed: George D. Jones

George D. Jones
Extension Entomologist

GDJ:O

914-37

SUGGESTIONS FOR PUBLICITY AND SUBJECT MATTER INFORMATION ON INSECT CONTROL - SEPTEMBER AND OCTOBER

Grasshoppers

Situation.

Grasshopper-control work has slowed up to a considerable extent. In many counties, however, there has been a more or less constant demand. There is serious damage being done at present in many counties in soybean, clover, and alfalfa fields. Fall seeded crops must be watched carefully. Recent reports indicate that several farmers in the worst infested counties are continuing control work. The soybean seed crop may be a total loss in some fields if conditions are not watched carefully. A second brood of the lesser migratory grasshopper (see the Missouri Agricultural Extension grasshopper bulletin) has been showing up for the past few weeks. This condition is rather unusual. At Columbia the majority are still about half grown. With 1 month or 6 weeks of warm and fairly dry weather, this species will mature and will be expected to lay a full crop of eggs for next year. In many cases the second brood is quite noticeably larger than the first brood. This particular kind feeds largely in pastures, alfalfa, and clover fields. However, it should be watched carefully in all crops. An unusually large number of eggs may be laid this fall by all species.

Control suggestions and work.

1. In counties where the infestation is sufficient to cause damage, publicity should be continued, and farmers should be urged to use the materials. Every hopper killed this fall means less trouble next year.

2. In regard to storage of any surplus materials, it may be said that, no doubt, a policy similar to last year's will be followed. Under no circumstances can the material be sold. The appropriation was a specific item set aside for 1 year for a specific purpose.

3. Reports. At the end of the season a very complete record of the work will have to be made. The Federal Government has prepared the forms, and these forms will be mailed to you during September.

4. A survey on abundance of adult hoppers will be made during the next 30 days. About twenty observations will be taken in each infested county. At a later date an egg survey will be made. This work will enable us to know where the heavily infested areas are. It will be very helpful to the men doing the work if each agent will get the following information and have it available for the men doing the work.

> 1. Portion of county in infested area. 2. Location of most heavily infested spots. 3. Location of fields where second brood of small hoppers are present.

Hessian Fly

Situation.

Stubble samples taken from early-seeded fields (fall 1936) indicate a very high population of flies. Samples taken from the Elsberry, Charleston, and Dexter areas showed as many as 120 flaxseeds per 100 straws. An infestation of this sort can produce an enormous number of flies in a field. Fortunately, in many counties only a small percent of the wheat acreage was seeded early last fall. There are individual farmers, however, and perhaps whole communities who seeded their wheat early. In the southwest, western, and central areas of the State the infestation in stubble is not as large as in the eastern and southeast sections. The numbers, however, are sufficient to warrant cautions against too early seeding of wheat. One heavily infested field in a community can infest a large number of fields.

Recommendations.

It is felt that farmers all over the State should not seed their wheat too early this fall. In the eastern and southeast counties, it, no doubt, will be best to observe strictly the safe seeding dates. In these areas call especial attention to the importance of destruction of volunteer wheat. Good seedbed preparation is an important aid in preventing losses due to flies. The use of fertilizers also is important, since they tend to produce quick and more vigorous growth. Early plowing of infested stubble followed with cultivation to prevent volunteer growth is a most effective control measure. This practice will not apply on every farm, since many farmers have clover in the fields and do not follow wheat with wheat in their crop rotation. Cooperation with all growers participating is also important. Date of seeding experiments conducted here at Columbia for several years indicates that on the average, wheat seeded near the safe seeding dates gives the largest yield. The specific safe seeding date for every county is given in Missouri Circular No. 192. Copies are available. The amount of publicity and work an agent should give to this subject will vary, depending on the conditions in each county. The counties in the above-mentioned infested areas should prepare several newspaper articles and get the information before the farmers. In some of the fields in these heavily infested areas the yield was cut as much as 75 percent and in a few cases more than 75 percent.

Insects Affecting Stored Grains and Other Products

Questions regarding treatment of stored grains and other products to prevent insect losses always arise during the fall months. If the storage space was not cleaned out thoroughly prior to storage, considerable damage to grain may result. Treatment should be done during early fall or at any time when the temperature is 70° or above for a few days. The effectiveness of the treatment is reduced if the temperature is much lower than this point. Everything should be done to make the storage space as airtight as possible. The chemical to use is carbon bisulphide, which is usually available at most drug stores. The usual recommendation calls for 1 pound of the material for each

100 bushels of grain, but this amount may need to be increased slightly if the bin is not gastight. Carbon bisulphide produces a gas which is heavier than air. It is inflammable, and fire of any kind should be kept away from the material during treatment. The material is a liquid and may be exposed in shallow pans, poured directly onto the surface of the grain, or poured into rolled sacks which are inserted down into the grain. The storage space should be kept closed tightly for 36 to 48 hours. A second treatment may need to be given in about 14 days. The use of this material will not affect the edible qualities of the products in any way. Better results will be had if the depth of the grain is not over 5 feet at any point in the bin. Penetration is slowed up if the grain is piled to a greater depth than this.

Control of Livestock and Poultry Insect Pests

The fall months is an ideal time to rid livestock and poultry of insect pests before cold weather sets in. This also is a good time to go over all winter quarters thoroughly, clean them out carefully, and disinfect them. Animals handled under these conditions thrive more economically. Such pests as poultry lice and mites, hog mange and lice, sheep ticks and lice should be removed in early fall before cold weather sets in. Dipping cannot be done satisfactorily after cold weather begins. Emergency treatments in midwinter or early spring, while effective, are usually given only after the animals have suffered considerably and show an unthrifty condition. Costs of caring for unthrifty animals are usually high. Treatment prior to serious infestation means a saving in feed costs and makes for better quality and higher market prices.

Garden Clean-Up and Pest Control

The fall of the year is a good time to destroy large numbers of garden insects. Many of the common and more troublesome ones can be reduced materially by cultural methods during the fall of the year. Among these are the squash bug, melon beetle, corn earworm, cabbageworm and others. Neglect in doing this work may mean the difference between success and failure of certain crops the following year. As soon as the crops dry up and are through fruiting they should be pulled and burned. This kills many insects, destroys their hibernation quarters, and stops development of any immature forms. After this is done, the garden may be covered with manure and plowed. Fall plowing further destroys hibernation quarters and exposes many to the elements and weather.

Control of Peach Tree Borer

The control of this pest is probably one of the most important factors in peach production. Trees subjected to attack are weakened greatly, and everything should be done to keep the trees in a healthy and growing condition. The insect attacks the trees at or just below the ground surface and, if not checked, may girdle the tree. When only a few trees are to be protected, a grower may use a wire and gouge up into the tunnels made by the borers. In larger plantings use of a chemical is very satisfactory and practical. The chemical which is known as paradichlorobenzene or p.d.b. is in crystalline form and is applied on top of the ground in a narrow ring encircling the tree

trunk. The amount of material to use depends upon the age of the tree. It is not usually safe to use the material on very young trees. For trees from 3 to 6 years old, three-fourths of an ounce is recommended. For older trees, from 1 to 1½ ounces may be used. Under Missouri conditions the chemical should be put around the trees about the last week in September or early in October. Fall application is best and usually sufficient, but another treatment in April may be advisable. The chemical is safe to use if used properly and is available at most drug stores. (Note: In counties where peaches are grown rather extensively, farm organizations may want to stock the material.)

Borers in Shade and Other Trees

Several reports have come in recently on various borers. The oak-twig pruner especially has been very active. (Agents who do not have a copy of Station Bulletin No. 373 on Control of Borers in Shade, Fruit and Forest Trees, should get copies for reference.) The trees should be kept in a healthy and thrifty condition, if possible, by cultivation and watering. Killing the borers with a wire probe and keeping the injured places covered with a good tree paint may also prove helpful.

Insects Destroying the Foliage of Walnut and Other Trees

Several insects have been destroying the foliage of many forest and shade trees this summer. Among these are the walnut caterpillar, tent caterpillar, and others. It is not always practical to spray the foliage of the trees, and about all that can be done is to fasten paper and cloth to one end of a stick and to burn the masses of caterpillars. Cutting off the infested leaves may be practiced in some cases. Where spraying can be done, 1 or 2 pounds of arsenate of lead per 50 gallons of water should bring about satisfactory control. The walnut caterpillar apparently has developed a second brood in most parts of the State. Banding the tree trunks has no effect on these insects, as the moths can fly.

Blister Beetles

Blister beetles have been unusually thick this season and have caused considerable damage in many instances. Their increased abundance is undoubtedly due to the increased grasshopper population, since the nymph forms feed almost entirely on grasshopper eggs. To control them it has been necessary to watch the crops carefully. Driving them into weeds is usually recommended. Sometimes it requires several attempts before they will stay away. Some claim that they have driven them into straw and then set it on fire. Under some conditions hand destruction is helpful. Arsenicals seem to act more as repellents, and if they are used the dosage should be increased materially to perhaps 4 pounds per 40 gallons of water. Barium fluosilicate, a fluorine compound, is also recommended. (Note: Any of these chemicals should not be used on vegetables which are ready for table use.)

Care of Bees

The 1937 season has not been favorable to beekeepers in many parts of the State. With many producers the fall honey crop will be the main crop. Many colonies may need to be watched very carefully as they may not have sufficient stores to carry them through the winter. Each colony should have at least 45 pounds of stores for the winter food supply. Uniting of colonies may be justified, and other good manipulation practices may need to be undertaken. A sugar syrup made by using two parts of sugar to one part of water may be fed the colonies that are in a weakened condition. Tartaric acid added at the rate of 1 teaspoonful to each 20 pounds of sugar will prevent the solution from crystallizing in the cells. All weak colonies should be united or brought up to full strength, since the wax moths usually kill out the weak colonies first.

Controlling Fleas About the Barn

Fleas may not be entirely eradicated, yet thay can be held in check. They may build up in numbers in hog barns, and then be carried into houses by dogs and cats. Fleas feed on the blood of animals and may live for several days without feed. Hence, the removal of animals from a building will not control the pest. The immature stages live in the litter and dust in the infested areas. In controlling the pest, the first step is to remove the litter, manure, and other material in which the young forms develop. This material should be scattered in a field at a distance from the buildings. The ground in the infested areas should be thoroughly sprayed with creosote oil. Waste crankcase oil mixed equal parts with kerosene may also be used. Calcium cyanide may be used in areas which may be closed tight. Caution must be used in preventing animals to be exposed to the deadly gas during treatment. Some report good success from the use of salt which is scattered over the infested places and wet down thoroughly with water.

EXCERPTS FROM STATE ANNUAL REPORTS

Indiana

Termite control demonstration.

Requests from many county agents that we give assistance in the control of termites led to a series of termite-control lectures and demonstrations. The fact that these meetings were well accepted is indicated by a total attendance of 569 at 11 meetings or demonstrations in ten counties. The idea was not to frighten the people nor to underemphasize the seriousness of the problem, but to clarify in the minds of the people many mistaken ideas and misconceptions about termites.

The scheduled meetings included lectures on the termite, exhibits of the insects and their damage, open discussions, inspection tours of infested buildings, and demonstrations of the proper methods of applying control measures. We stressed the importance of a thorough analysis of an infestation so that control measures could be adapted to fit the specific requirements of the situation.

In addition to direct benefits obtained, these meetings gave the county agents opportunity to extend their work to reach a class of people more or less unfamiliar with the varied activities of county agents.

4-H club work.

Insects were in great demand at Camp Alexander Mack on the shores of Lake Wawbee during the week of June 16. Two hundred and fifty boys and girls from the counties of Jay, Blackford, and Huntington assembled here for their annual 4-H club camp. Insect study was the principal educational activity at the camp, and many boys and girls were given their first instruction in this fascinating subject.

Classes for discussing fundamentals of insect life and insect control were held in Major Hall. Field trips to observe and study insects in their natural surroundings were made daily along the shores of the lake and through the wooded areas nearby. Many who exhibited interest in collecting and preserving insects were given individual instruction in this branch of entomology.

The first principle of insect control is a thorough knowledge of insects and their habits. We believe that club camps offer an excellent opportunity for such study. Arrangements have been completed to attend four additional 4-H club camps in July and August.

/ Insect collection and identification contests were held as usual at the annual 4-H club round-up at Purdue.

North Dakota

Horse-bot control was a favored project among horse owners the past fall and winter. In the winter of 1935-36, this project was attempted on a cooperative basis in eight counties. However, extremely heavy snows and blocked roads made it impossible to complete the plans, but enough work was done to demonstrate the value of bot treatment. In Dickey County, over 500 head of horses were treated on 60 farms. A questionnaire later sent to the owners showed that they observed an average of 67 percent decrease in the number of nose flies in the summer. All reported favorably on the thriftiness of their animals. Similar results were reported in Ransom County, where three townships treated 793 horses cooperatively.

Late in the summer a questionnaire was sent to the farmers who had treated their animals. The questionnaire, and a summary of the twenty-five answers received is as follows:

Questionnaire

1. Do you believe the horse-bot control program to be worth while? _____

2. Could you notice any difference in your horses before and after treating? If so, what? _____

3. Did the treatment affect your horses' appetites? If so, how? _____

4. Did your horses make better use of their feed after treatment than before? _____

5. Did your horses pass any bots? _____
   If so, how many (approximate)? _____
   Any worms? _____

6. Make a short statement setting forth your opinion regarding the effectiveness of the control program, benefit to horses, and your suggestions for improving it. _____
   _____

(Signed) _____

(Address) _____

The preceding questionnaire was mailed from the agents' office and twenty-five answers were returned:

Results

Question 1. All of them answered Yes.

Question 2. The majority noticed marked improvement in the horses' flesh, pep, appetite, utilization of feed, and general improvement.

Question 3. Nine of the farmers noticed an improvement in the appetite.

Question 4. Twenty of the farmers noticed that the horses could make better use of their feed after treatment than before.

Question 5. Twenty said Yes. The number varied from 3 to 50. One farmer reported finding 9 bots and 18 roundworms in one passage from a yearling. Another reported his horses passing 50 bots per head. Seventeen farmers noticed passage of worms in addition to the bots.

Question 6. Following are a few of the replies:

"I think this is one of the most worth-while programs adopted by our township. When one or two individual owners treat their horses within a township, without 100 percent cooperation, much of the effectiveness is lost, and it is also much cheaper to have a veterinarian cover a whole township than to visit an individual farm. At prevailing feed prices and rather poor condition of horses, I don't see how any townshiip can pass up such a program and still figure they have saved themselves some money."

W. E. Lillicrap, Sheldon.

"I believe every township should carry on a horse-bot control program. If carefully carried out over a number of years, such a program should practically eliminate the adult fly that causes the bots."

J. O. Nessett, Sheldon.

"While the treatment not only killed bots and worms, it seemed to have reduced the botfly pest. My horses seemed to have more life, also, after the treatment. I am very much in favor of it."

Alfred Bueling, Sheldon.

"All O. K. A neighbor who didn't treat, 2 or 3 years ago, lost one due to bots having eaten through the stomach, so I'm much in favor."

Arthur Buss, Sheldon.

"Horses were in better condition in spring, both as to looks and action, with the same amount of feed, and with the absence of nose flies and bots except on certain days. This treatment should be made county-wide, with State-wide treatment the objective."

Dworshak Bros., Sheldon.

During the fall and winter of 1936-37 the Extension specialist in North Dakota conducted educational meetings in nine counties where bot control was discussed with horse owners. As a result, several townships organized and treated their horses on a cooperative basis. Following one of the meetings, the members present adopted a resolution favoring a State law providing for the payment of bot control out of township funds. The horse owners appointed a committee from their group to draw up such a bill, and it was presented to the legislature.

As a result of the interest shown in horse-bot control, an extension circular on these insects has been prepared, and will be available to all horse owners within a few weeks. Also, a 22- by 28-inch chart showing diagrammatically the life history of these insects is being prepared for distribution to all county agents.

Colorado

More about horse bots.

This report of work in Colorado reached the Extension Entomologist in a roundabout way, but it substantiates reports of work from Mr. Butcher in North Dakota:

"Two hundred and sixty-nine farmers in Yuma County, Colo., saved $10,290 because they cooperated with the county agent in having their horses treated for bots. This figure was arrived at by multiplying the number of head of horses by five, ($5 represents the cost for each horse). Horses treated numbered 2,058. Dr. Graham was the veterinarian that did the work, and he charged 40 cents a head. The agent waited until spring work was completed and summer work well along before he mailed letters to each cooperator. In this letter he asked the farmer if he thought the treatment was worth while and, if so, the estimate value per head in dollars and cents. Opinions varied. Three men stated the value to be $15 per head. Five men reported $8 per head. A few said it was of no value, but the average value stated was $5 per head."

Farmer comments on program.

The following items were taken from a few of the reports:

"I botted 12 head of horses and think it a great success. I think it is worth many times more than it cost. As to value in dollars and cents,

I am not able to state what that would be."--F. F. Neuschwanger, Eckley.

Ales Shaw, of Joes, had the following to say: "I treated 21 head of horses, and a conservative figure regarding the value would be $50. The results were absolutely satisfactory. We hope that this work will be carried forward to an even greater extent than during last year."

Sam Shaffer, of Laird, treated 9 head and valued the treatment at $10 a head. He states: "These horses were in good shape when given the capsules. Within 6 weeks, all but small colts had gained at least 100 pounds. My horses had not a nose fly all summer and very few botflies."

Loren Truman, of Wray, had the following to say: "Our horses did more work this summer and spring and fretted less than any spring in the past. I think we owe it to the botting campaign that was carried on in this locality last winter. We noticed just one nose fly this spring, and this was on my neighbor's horse which is quite old; and, since botting, it looks better than it ever did, even when a colt."

Another man who treated 23 head said it was worth $200 to him.

South Carolina

Methods of Insect Control

Bedbug control.

Striking results with hydrogen cyanide gas were secured in controlling bedbugs at Camp Long. Many home agents after hearing of the results invited the extension entomologist to speak on household insects to groups of farm women. The home agent in Columbia told me that she had one demonstration on bedbug control with heat. Excellent results were secured when a temperature of about 140° F. was maintained for several hours with the furnace.

Housefly control with formaldehyde.

Striking results were secured with a poison bait in unscreened temporary headquarters of the Extension Service. Many extension workers saw the dead flies and went home and wrote articles for the newspapers. The bait contained:

1 pint skimmed sweet milk
1 pint water
1 tablespoonful formaldehyde

Asparagus-beetle control.

County Agent Craven reports on a successful method of asparagus-beetle control in the spring. Every eleventh row was left uncut as a trap

row on which to poison the beetles. The poison consisted of:

2 pounds calcium arsenate
1 teacupful flour
3 gallons water

applied with a mop twice a day at 2-day intervals. Counts of dead beetles ran as high as 42 per hill of grass. Producers estimated that 80 percent of weevils were killed.

"The above results obtained from this demonstration are conclusive evidence that the asparagus beetle can do considerable damage in a very short while, but can be controlled with poison, and at the same time results in only slight loss in grass harvested by the producer."

In 4 days a loss of $25 a day was stopped by this method.

4-H Club Insect Study

Considerable interest was manifested in insect study by 4-H club boys and girls in Richland and Lexington Counties. In this connection demonstrations in collecting and mounting insects were given.

Texas

4-H club work.

Ten days were spent in giving entomological instruction and in rendering assistance in recreation at 4-H club encampments. This instruction and assistance proved profitable and promised great future possibilities. The club boys were shown how and where to collect insects, how to mount them, and then were aided in identification of specimens. The work was made elective with the boys, and we were pleased that a large percentage undertook the work and that their interest continued to its completion. Not only this, but the interest aroused there has been maintained throughout the year. At these meetings as well as a few others where the entomological feature was not included, we were called upon to render aid in the recreational program through a program of magic and a chalk talk.

An outgrowth of the club encampment work was an insect collection and identification contest held for club boys at the summer short course. This was hurriedly planned, and there were only a few entries, but the boys were enthusiastic. Other counties in addition to those entered last summer have asked that this feature be presented another year.

Demonstrations in ox-warble control.

Nine days were spent in this work. Farmers and stockmen have appealed

for methods of controlling the heel fly. They have been told there is no control for it at the season it appears, but that its numbers might be reduced or that it might be exterminated by measures directed to the removal of the ox warble from the backs of animals. In the fall of the year an itinerary was planned into several counties of District VI as far westward as El Paso County. Meetings were called by the agents at ranches where infested animals were corralled, and the destruction of the warbles was demonstrated by the use of a derris-root mixture in soapy water vigorously scrubbed into the hair of the animal's back with a coarse stable brush. The agents and farmers and ranchers were enthusiastic about the results of this work. Demonstrations in ox-warble control will be made a major project in 1937.

Demonstrations in control of orchard insects.

Five days were given to aiding the county agent of Walker and Llano Counties in demonstrating control of orchard insects. In Walker County, a program of peach and plum insect control was carried out under our direction on the orchard of the Goree Prison Farm at Huntsville. This orchard had produced heretofore only ill-formed and wormy fruit. As a result of the program carried under our direction and in which we demonstrated application, the largest crop ever produced by this farm - and all absolutely clean - was reported. The production was sufficient for the immediate use of the inmates of this unit and for canning their entire supply for winter.

DEPARTMENT OF COMMERCE SPEAKS

Cost of U. S. Fight on Insects Placed at $200,000,000 Yearly

"One of the greatest of all American industries is the fight on insects, a battle in which the American people spend $200,000,000 a year", Harry R. Daniel of the Commerce Department said in his weekly broadcast in a series on great American industries.

"One-tenth of all the food raised in the United States year after year goes to feed destructive insects, and the loss from insects amounts to $3,000,000,000 a year", Daniel said.

. . . . . .

"If it were not for man's fight against insects", Daniel said, "many great American industries would be seriously crippled, if not actually destroyed.

. . . . . .

"Some time ago", Daniel continued, "the outcome of an election in Manila was disputed. The judge ordered a recount, but when the ballot boxes were opened termites had eaten all the votes.

"The number of insects on the earth hardly can be conceived by the human mind", Daniel said. "It is probable that the average front yard contains far more different kinds of insects than there are stars visible in the sky. And almost every variety of insect has a capacity for reproducing its kind at a rate of increase which is actually terrifying. For example, it has been calculated that the offspring of a single cabbage pest, without accident or control, within 5 months' time would form a mass five times as great as the total mass of all living humanity. An acre of meadowland will, on the average, contain at least 15,000,000 insects."

--Washington Star, August 8, 1937.

TIMELY TOPICS

Termite official.

Springfield, Mass., is the only city in the country which has taken sufficient notice of the destructive possibilities of termites to appoint a full-time official to advise property owners how to fight and eliminate the pests, says a report in the New York Times. S. Roy Whitney of the city building department is the official assigned to the job. In the last year it is estimated that he has saved many thousands of dollars for taxpayers by aiding them to rid their places of termites. And at that, Mr. Whitney says, it cost the citizens probably $20,000 to repair the damage done by the insects in 1936. He figures the national loss during the year was about $50,000,000.

Senior Extension Clubs.

An article, "Senior Extension Clubs in Pennsylvania" appears in Rural America (April). The author, C. P. Lang of State College, Pa., says in part: "Pennsylvania senior extension clubs are groups of young people over 18 years of age in rural communities. They are sometimes composed of young men, sometimes of young women, but more often both. Most of the groups are community affairs, although a few take in a larger part of or even an entire county. They are organized by the county farm or home agent under the supervision of the Agricultural Extension Service. In 1936, there were 27 of these averaging 22 members each. Since then 10 more have organized and others are under way. Most of them hold monthly meetings. Objectives which have been set up by those in charge working with members of groups are: (1) Development of the member's ability in leadership through program planning, training in parliamentary procedure, committee responsibilities and office holding; (2) study and discussion of topics related to the social and economic life of young people; (3) dissemination of information concerning progressive farm and home practices; (4) provision of opportunity for rural young people as a group to do community service; and (5) furnishing interesting and worth-while social and recreational activities... ."

Chemo-enemies.

In a discussion of Chemo-Enemies, particularly lead and arsenic, in foods, Dr. P. J. Hanzlik, of Stanford University School of Medicine, asks: "What's to be done?" He says in part: "It would help all concerned, the growers, the enforcement authorities, and the people generally, if some independent or government agency would undertake a complete 'epidemiologic toxicologic' survey of a region which has been well sprayed for years. This would get at all the facts concerning soil, animals, people, vegetation, industrial regulation, desirability of tolerance limits for the poisons, and other related matters of interest. This would help the government enforcement agencies in carrying out the will of the people. The United States Department of Agriculture has already done a great deal to make the public conscious of, and protect it against this menace, but there are apparently also limitations to its power and influence. It is evident from the results of recent prosecutions of many violations that the public is not yet awake to the real situation. The merits of the problem are often obscured, or smoke-screened, by irrelevant matters and trivialities. Government control is interpreted as persecution of, or interference with, legitimate business. The truth is that the Federal authorities are actually concerned with the economic aspects, as well as with health hazards. In fact, they are the only ones doing anything constructive about the situation. A great deal of research is being done under Federal guidance to determine the best possible insecticides whose health hazard would be negligible and the costs minimal. The proper way to deal with the health hazard of heavy metals, like lead, is to eliminate their use altogether and to develop new insecticides of a totally different kind. This is actually being done experimentally, and it is not too much to hope that practical success will soon be achieved."

Derris poisoning.

"The Ministry of Agriculture", says an item in Gardeners' Chronicle (London, April 17), "desires to draw the attention of gardeners, farmers, fruit growers, and others to the poisoning of fish, which may be caused by the presence in rivers or streams of solutions or powders containing derris root or rotenone, or any preparation made from derris root. Derris preparations, as our readers are well aware, are now used extensively in agriculture and horticulture...When using derris preparations, care should be taken to prevent any of the solution or powder entering rivers or streams containing fish. The practice of the washing, or the indiscriminate dumping, of containers of derris preparations in rivers or streams is to be strongly condemned. The Ministry accordingly appeals to all users of derris insecticides to take every possible precaution to prevent the poisoning of fresh-water fish from this cause."

Insect pest plays havoc.

Berlin.--It is estimated officially that insects destroy every fifth apple, every tenth grain of wheat, every twelfth bean, and every thirteenth potato grown in Germany.--Exterminators' Log, July 1936.

Enforced pest control.

With the view to expanding the national agricultural output to maximum levels, new legislation was enacted in Germany on March 5 empowering the Minister of Foodstuffs to enforce the use of insecticides and institute other crop-protective measures for combating plant pests and diseases, says a report from Consul Sydney B. Redecker, Frankfort-on-Main, to the Commerce Department. The new legislation is designed to reduce the heavy agricultural losses from pests and diseases--estimated at from 60 to 80 million dollars per annum, thus lessening the nation's dependency upon foreign countries for foodstuffs, the report states. Under provisions of the decree the Reich Minister of Foodstuffs is endowed with far-reaching powers such as requiring farmers to allow officials to inspect their lands and stocks where infection is suspected, the destruction of infected crops and agricultural products as well as the disinfection of soil, warehouses, and equipment, and institute other measures designed to reduce pests and diseases, including the rotation of crops, it was stated.

British quarantine on 'mums.

Gardeners' Chronicle (London, April 10) reports: "With the object of preventing the introduction, through the medium of imported plants, of the chrysanthemum midge (Diarthronomyia hypogaea, F. Low), which has proved a serious pest of greenhouse chrysanthemums in North America, the Minister of Agriculture and Fisheries has made an order under the Destructive Insects and Pests Acts, 1877 to 1927, prohibiting, as from April 12, 1937, the landing in England or Wales from any country other than Scotland, Northern Ireland, the Irish Free State, the Isle of Man, or the Channel Islands, of any living chrysanthemum plant and parts thereof (except seeds) for planting, except under license...The Ministry will be prepared to entertain applications for licenses which will require the imported plants to be kept isolated from other chrysanthemums in a separate greenhouse and to be examined from time to time by one of the ministry's inspectors until all danger of the appearance of chrysanthemum midge is past. Occasional spraying with a nicotine wash may also be required. "The issue also notes publication of the second issue of The Agrostologist," which is issued three times yearly, to form a link between the theory and practice of turf management." It is published by T. W. Evans and I. G. Lewis, Hamilton House, Mabledon Place, London, W. C. 1.

NEW PUBLICATIONS

The following bulletins have been received by the Office of Experiment Stations Library in Washington during August. If you are interested in this list, I shall be glad to review the bulletins that come in each month and list in future issues of The Extension Entomologist, those bulletins pertaining to insects. The Department of Agriculture does not have copies of these publications for distribution. Most of them can be obtained from the stations or colleges issuing them, the addresses of which are given.

The Clear Lake Gnat - W. B. Herms. (California Station Bulletin 607, June 1937) Berkeley.

Gladiolus Insects in Iowa - H. D. Tate and M. E. Poor. (Iowa Station Bulletin 359, May 1937) Ames.

Oil-Nicotine, A Promising New Insecticide - P. O. Ritcher and R. K. Calfee. (Kentucky Station Bulletin 370, July 1937) Lexington.

The Performance of Certain Contact Agents on Various Plant Surfaces-Studies of Contact Insecticides xii. - W. C. O'kane, L. C. Glover, and W. A. Westgate. (New Hampshire Station Technical Bulletin 68, May 1937) Durham.

Influence of Different Materials on Coverage and Adhesiveness of Sprays and Their Effect on Residue Removal from Apples - Albert S. Weber and others. (New Jersey Station Bulletin 627, April 1937) New Brunswick.

Codling Moth Biology and Control Investigations - C. R. Cutright. (Ohio Station Bulletin 583, July 1937) Wooster.

Removal of Spray Residue from Apples - C. E. Ellenwood, V. H. Morris, and E. A. Silver. (Ohio Station Bulletin 584, July 1937) Wooster.

Resistant Varieties of Sorghum and Corn in Relation to Chinch Bug Control in Oklahoma. Ralph O. Snelling and Reynold G. Dahms. (Oklahoma Station Bulletin 232, July 1937) Stillwater.

Abstracts of Bulletins 523-528, Circulars 77-78, and other publications during 1936. A. D. Jackson. (Texas Station Circ. 79, March 1937) College Station.

The Oriental Peach Moth in Virginia Apple and Peach Orchards - W. J. Schoene, and others. (Virginia Station Bulletin 308, April 1937) Blacksburg.

Truck Crop Investigations-Control of Cabbage Worms. Harry G. Walker and Lauren D. Anderson. (Virginia Truck Experiment Station Bulletin 93, October 1936) Norfolk.

European Corn Borer Investigations - Experiments with Insecticides on Early Sweet Corn - C. H. Batchelder, D. D. Guestel and Neely Turner. (Connecticut State Station Bulletin 395, June 1937) New Haven.

Pest Control in the Home Garden - A. I. Bourne, O. C. Boyd. (Massachusetts Extension Service Leaflet 171, July 1937) Amherst.

Controlling Sucking Insects on Conifers - E. I. McDaniel. (Michigan Extension Service Bulletin 175, February 1937) East Lansing.

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